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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,686	03/28/2001	Satoshi Nakamura	040894-5653	2438

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MORGAN LEWIS & BOCKIUS LLP
1111 PENNSYLVANIA AVENUE NW
WASHINGTON, DC 20004

EXAMINER

CHERVINSKY, BORIS LEO

ART UNIT PAPER NUMBER

2835

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/818,686

Applicant(s)

NAKAMURA, SATOSHI

Examiner

Boris L. Chervinsky

Art Unit

2835

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,10-12,15-18 and 20-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,10-12,15-18 and 20-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 10-12, 15-18, 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christopher et al. in view of Miyagi et al. and further in view of Biber et al.

The examiner is referring the rejection of claims 1, 10-12 and 15-18 and 22-22 to the rejection presented by the Board of Patent Appeals and Interferences (BPAI), which is relied upon combined teachings of Christopher and Miyagi. Although, Christopher and Miyagi disclose the claimed invention, as shown in BPAI decision, but the amended claims 1 and 15 do not include fins having uniformly shaped corrugated cross section, and Christopher does not disclose that the second heat radiating pattern formed on the rear surface of the circuit board serves as the grounding electrode. Miyagi discloses the heat radiating means comprising fins and the heat radiating pattern serves as the grounding electrode (col. 6, lines 26-32), therefore it would be obvious to the one of ordinary skill in this art to include the fins and use the heat radiating pattern as ground as disclosed by Miyagi in the structure disclosed by Christopher. Biber discloses the heat sink comprising a plated layer 26 that can be brought to contact with the circuit board and heat radiating fins 24 having uniformly corrugated cross section. It would

Art Unit: 2835

have been obvious at the time the invention was made to a person having ordinary skill in the art to use corrugated fins as disclosed by Biber in the structure disclosed by Christopher and Miyagi to provide sufficient cooling and to simplify the manufacturing process. The extrusion as claimed method of making in article claim does not assert the patentability since the final product using the claimed method of making is not shown.

3. Claims 23, 24, 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christopher et al. in view of Miyagi et al.

Christopher discloses the claimed printed wiring board that has an electronic component with a heat radiating plate mounted on a circuit board, comprises at least a first heat-radiating pattern connected by soldering to the heat radiating plate, and a second heat radiating pattern to which is soldered heat radiating means on the opposed side of the circuit board, wherein the areas of the second heat radiating pattern is larger, however small the difference, than the equal areas of the plate and the first heat radiating pattern on the opposed side of the circuit board. The one of ordinary skill in this art would have found in the disclosure of Christopher at col. 4, lines 22-38, and Christopher FIG. 2, that the thermally conductive path includes, an unnumbered heat-radiating plate under each of the heat-generating components 119 and 225; respective first heat radiating pattern solder layers 203 and 227; respective metalized vias 205 and 229; and the respective second heat radiating pattern solder layers 203 and 227, to reach the heat radiating means having respective surfaces 113" and 223 mounted on respective second heat radiating pattern solder layers 203 and 227, as shown by Christopher FIG. 2 (cols. 3-4).

Art Unit: 2835

The printed wiring board shown in Christopher FIG. 2 differs from the claimed printed wiring board in that the second heat radiating pattern layers 121 and 121' do not have a larger area than the first heat radiating pattern layers 203 and 227. Although, as shown in Fig. 2 of [Christopher], a heat radiating plate (not numbered) is mounted under the electronic components 119 and 225 has an area smaller than those of radiating patterns 203, 227, 121 and 121' the reasonable suggestion that the workable or optimal range of the area of each of the metal elements of the thermally conductive path can be determined for the desired amount of heat radiation.

Christopher discloses the claimed invention except fin radiating means and the heat radiating pattern represents a grounding electrode. Miyagi discloses the heat radiating means comprising fins and the heat radiating pattern serves as the grounding electrode (col. 6, lines 26-32), therefore it would be obvious to the one of ordinary skill in this art to include the fins and use the heat radiating pattern as ground as disclosed by Miyagi in the structure disclosed by Christopher.

4. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Christopher et al. in view of Miyagi et al. and further in view of Biber.

Christopher and Miyagi disclose the claimed invention, but do not disclose fins having uniformly shaped corrugated cross section. Biber discloses the heat sink comprising a plated layer 26 that can be brought to contact with the circuit board and heat radiating fins 24 having uniformly corrugated cross section. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use corrugated fins as disclosed by Biber in the structure disclosed by Christopher and

Art Unit: 2835

Miyagi to provide sufficient cooling and to simplify the manufacturing process. The extrusion as claimed method of making in article claim does not assert the patentability since the final product regarding of method of making is structurally the same.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Boris L. Chervinsky whose telephone number is 571-272-2039. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on 571-272-2800 ext. 35. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BORIS CHERVINSKY
PRIMARY EXAMINER

Boris L. Chervinsky
9/14/5